



If you have trouble concatenating two values, see "Converting Values to Text Before Concatenating" in the "Troubleshooting" section at the end of this chapter.

DATE AND TIME FUNCTIONS

Use date and time functions for simple tasks, such as displaying today's date or the day of the week for a given date. If you run an organization whose members pay dues annually on their birthday, how do you create a list of birthdays sorted by month? If you sort by birthday, you'll end up with a list that's sorted by the members' ages. To sort properly, you'll have to create a column in which each row contains a formula that uses the MONTH function to convert a date to a month.

NOTE

There is a profound difference between using a function to convert a value and using cell formats to change the display of a value. Functions return a different value from the value you use as an argument. When you change formats, on the other hand, the underlying value stored in the cell remains the same.

→ For an overview of how Excel enters and manipulates dates as serial values, see "Setting Date and Time Formats," p. 565.

Date functions can help you perform even the most sophisticated calculations. For example, U.S. tax laws require that participants in some types of retirement accounts begin withdrawing funds and paying taxes as soon as they turn 70 1/2 years old. To calculate the first day of the month after a person reaches that age, enter the account holder's birthday in a cell named Birth_date, and then use the following formula to calculate the retirement date:

```
=DATE(YEAR(Birth_date)+70,MONTH(Birth_date)+7,1)
```

Table 20.2 lists the most useful date and time functions, along with examples of how to use each one.

TABLE 20.2 DATE AND TIME FUNCTIONS

Function Name	Description	How to Use It
TODAY(), NOW()	Return the current date or time as a serial value	No argument required. Enter =NOW() to plug the current date and time into a cell; use TODAY() to enter only the current date.
YEAR(serial_number)	Convert a serial date value to its year, month, or date	Useful when you need to separate the components of a date entered in a cell to create a list of all birthdays for all employees and sort it by month, for example.
MONTH(serial_number)		
DAY(serial_number)		

continues

TABLE 20.2 CONTINUED

Function Name	Description	How to Use It
WEEKDAY (serial_number)	Convert a serial date value to a weekday	Useful in formulas in which you want to calculate paydays or due dates. The result is a number from 1 (Sunday) to 7 (Saturday). Format the result using the "ddd" or "dddd" format to see the results as a day of the week.
HOUR(serial_number) MINUTE(serial_number) SECOND(serial_number)	Convert a serial time value to its hour, minute, or second	Useful when you need to separate the components of a time entered in a cell—to create a list of all starting times for a golf tournament, for example, grouped by hour.

You'll find an interesting collection of special-purpose date and time formats in the Analysis ToolPak, an Excel add-in. `EOMONTH(TODAY(), 0)`, for example, returns the last day of the current month—a useful calculation when working with payments that are due on the last day of the month. (Change the second argument to 1 to return the last day of next month, or -1 for the previous month.) Other date/time functions in the Analysis ToolPak include `WORKDAYS` and `NETWORKDAYS`, which are useful when you're calculating project timelines. To install the Analysis ToolPak, click your Office button and then click the Excel Options button to open the Excel Options dialog box. Click to display the Add-ins group. At the bottom of the window, select Excel Add-ins in the Manage drop-down list box and click Go. Excel opens the Add-ins dialog box, telling you the add-ins that are currently available to you. Click the Analysis ToolPak option and click OK. If the add-in isn't currently installed (and it obviously won't be initially), Excel will offer to install it. Click Yes to begin the installation.

LOOKUP AND REFERENCE FUNCTIONS

The 18 functions in the Lookup and Reference category are intended for use with lists and tables. `HLOOKUP` and `VLOOKUP`, for example, are designed to help you track down specific information in a table—by row or column—based on the contents of a cell that contains another value to use for comparison. (`LOOKUP`, which sounds like a simpler version of both functions, is included only for compatibility with other spreadsheet programs and is not recommended for use with Excel.) `MATCH`, `INDEX`, and `OFFSET` are other functions in this category that are useful for reference tasks, such as locating information in tax tables.

The syntax of all these functions is hideously complicated and rarely worth the effort. If you must add this type of function to a worksheet, do yourself a favor and use the Lookup Wizard, an Excel add-in specifically designed to generate these formulas with minimal effort on your part. For example, if you store a list of part numbers, product names, and prices in an Excel table, you might want to create a data-entry area at the top of the table that lets you enter a specific part number and quickly look up the corresponding product name and price.